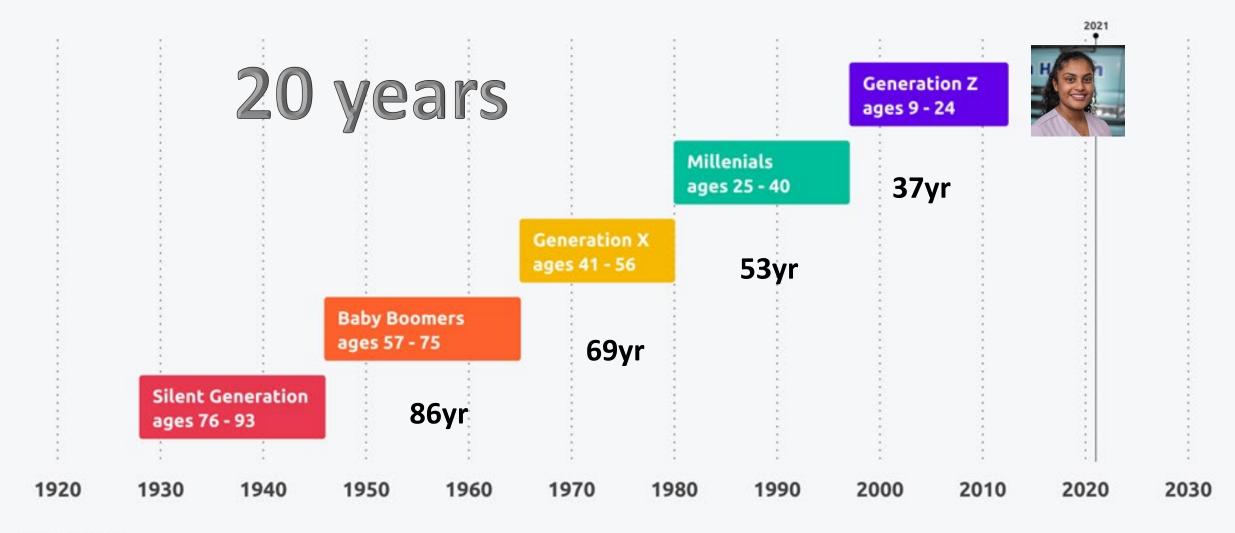
Putting the Boot to Climate Change

Rashmi Perera | Fulton Hogan



Why Climate change important to me...?



Source: Wikipedia

What have I looked at ?

CO₂ from Heavy maintenance. Mill and fill (50 mm AC) Stabilisation (200 mm 2%) Digouts (350 mm)

Calculated the Carbon dioxide equivalent (CO_{2-e})







How did we do it?

Research - Fulton Hogan / Callaghan innovation "lighter road resurfacing strategies – Jack Downs, April 21"

Broke Down - each treatment into plant – travel - materials.

Applied - calculation for litres burned, tonnes used, m2 constructed.

Compared - Treatments on a 100 m^2 site - 50km from depot.

Stablising		100	m2		3.5622806																		
Travel							Si	ite specifi	ic 100m2 patch							Travel							
Single K	lilometre	Values					Si	ingle Ki	Iometre Values	:						Single	Kilometr	e Values	5				
Kilometi	es Trave	lled:	5	50			Ki	ilometre	es Travelled:	1	1					Kilome	tres Trav	elled:		50			
Total lite	es of die	sel	6	6			Te	otal litre	es of diesel	1	1					Total lit	tres of di	iesel		66			kgCO2
Total En	nissions (kgCO2	17	8	4.24		Te	otal Emi	issions (kgCO2	1643	1					Total E	missions	(kgCO2	-	178	4.2	4	
																							19.9
										Efficiency (km/L		kgCO2-e/L	kgCO2-e	notes									
			Efficiency (km/		kgCO2-e/L				/an 4x2 D Hiace	3.709									Efficiency (k			L kgCO2-e	
	Van 4x2 D		3.70					L	Jte 4x4 BT50	8.370		2.69	0.32				Van 4x2			709 13.4			
	Ute 4x4 B	T50	8.37						v/ater cart	4.006		2.69	0.67				Ute 4x4 E	BT50		370 5.9			
	Water cart		4.00					Т	Fraffic control	4.006	0.250	2.69					Water ca	art		006 12.4		9 33.57	
	raffic cor	atrol	.00	12,48	1 2.69	33.57				IS I	l/hr		kgCO2-e				Traffic er	ontrol	4	06 12.4	81 26	3 33 57	╮┿
		$-\mathbf{V}$							Stabilizer	0.500	25,900	42.1	33.625									-()(
	Cement s	der	.37	2 11.	2.6	-20. YC			Roller	1.00	28.200		53.8				Ceme	preder	4	52 -4.4	36 💙 28	2 03.76	<u> </u>
	Transporte	er	4.82	10.360	2.69	27.87		0	ement material				56.7				Transpor	rter	4.	826 10.3	50 2.6	9 27.87	
								G	Grader	2	2 18	36	96.84										
								C	Cement product	8 kg/m2	800.000	0.9	720	0.9kgco2 per 11	(goreated	H							
									vater cart	0.5					Ĩ.								
								C	Chipseal and crew	travel			659										
										*													
Mil and Fi	l .	100m2																					
																	- A	11	a shirt the	Ter Role			ALL A







				and the second second	P. C. S. C. S.		a little								
Digout 100) m2														
Travel			Site spec	ific 100m2	patch					Travel					
Single Kilometre Values	5		Single H	Kilometre	e Values	2				Single Kilor	netre Value	s			
Kilometres Travelled:	50		Kilomet	res Trave	elled:	1				Kilometres	Travelled:	50			
Total litres of diesel	78		Total lit	res of die	esel	1533				Total litres	of diesel	78		k	(gCO2
Total Emissions (kgCO2	209		Total Er	nissions	(kgCO2-	-e):				Total Emiss	ions (kgCO)	2 209			

Results ... 100m² site

Biggest reason

Mill and Fill	1.18 т	Single site visit	High \$\$\$
Stabilisation	1.99 т	Cement (40%)	Faster (more m2)
Digout	2.15 T	Construction time	New pavement - \$\$

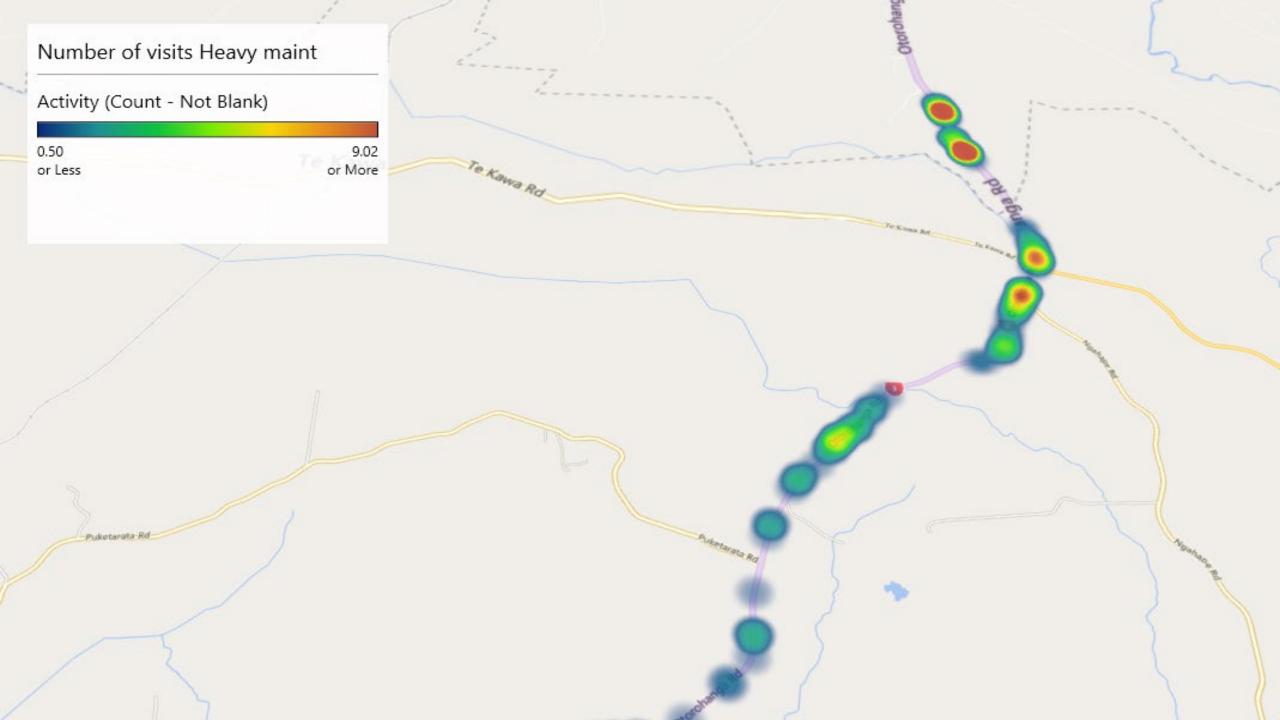
Looking at a carbon lens only

But...when selecting a Treatment

Suitability - Will it work ?

- Budget Getting the best bang for buck !
- Carbon Reducing our impact !!







Eureka Moment



7 visits in 13 years a lot Nature of road maintenance

Maximise treatment life leads to greatest carbon reduction

Conclusion

Understand - carbon impact different treatments

Know - by reducing visits we can lower CO_{2-e}

Focus - choosing best treatment to maximise its life

Future

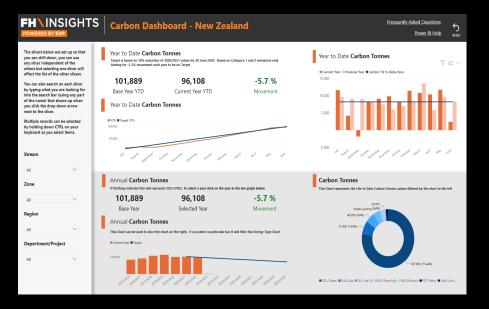
Training and revision - Mtc Intervention guidelines (MIG)

Tracking - Carbon dashboard

Product development - Important

Alternate fuels - Electric / Hydrogen

	Seue	rity Rating	U	S1	<u>\$2</u>	S3					
		to Example			34						
1	De	scription	OPM issue + Safety multiple potholes forming	At OPM: will develop into potholes quickly	cracking clearly evident	Emerging defect: minor cracking					
	Ro	ot cause	Longitudinal & Transverse -> pavement lagers have consolidated or compacted irregularly in larger areas, -> trench settlement, -> block cracking due to loads on previously stabilised pavement lager Alligator (Surfacing) & Fatigue (Pavement) -> water in base and subgrade pumped to surface through traffic loadings, - > surface failing								
Cracking	S	P - Pre- seal	Programme kevy maintenance: Stab - 200mm depth and stabilisation agent in accordance with roll texts, or Digout - depth ('blue' book), or Mill & Fill (100mm - 30mm surfacing) - meet economic. Investigate/attend to drainage. If length > 15% of 100m length -> DFHAM	Programme heavy maintenance: Stab - 200mm depth and etabilisation agent in accordance with soil tests, or Digout - depth ("blue' book), or Mill & Fill (100mm + 30mm surfacing) - most economic. Investigate/attend to drainage. If length > 15% of 100m length -> msu.e	Programme heavy maintenance: Rip & remake 200mm. Look for drainage izeroe. If length > 15% of 100m length -> REHAB	Monitor, Look for and attend to drainage issues.					
	Action - Given MIS	N - Normal	Programme kevy maintenance: Stab - 200mm depth and stabilisation agent in accordance with roll tests, or Digout - depth ('blue' book), or Mill & Fill (100mm - 30mm surfacing) - most economic. Investigate/attend to drainage. If length > 15% of 100m length -> REHAB	Look for and attend to drainage issues. Programme for permanent repair if adjacent to other repairs.	Monitor. Look for and attend to drainage issues. Programme for permanent repair if adjacent to other repairs	Monitor. Look for and attend to drainage issues. Preventative maintenance: waterproof the area to prevent water ingress					
		RH - Rehab H - Holding	Holding / make safe repair: fill and level with mix. Programme for permanent repair as appropriate.	Holding / make safe repair: fill and level with mix. Programme for permanent repair as appropriate.	Preventative maintenance: waterproof the area to prevent water ingress.	Monitor					
	Seve	erity Rating	U	\$1	\$2	\$3					



A Final thought.....

NOC - 27,000 m² FH Business - 750,000 m²

15,000,000 m²

Thank you for listening!